– addressing the use of technology for assessment and upper limb rehabilitation in MS.

Results and discussion.– This presentation incorporates an overview of findings from recent literature and experience from our research group and affiliated clinical centres specialized in MS [4]. Outcome measures like the Nine Hole Peg Test, Action Research Arm test, ABILHAND, Motor Activity Log, MAM-36 and Accelerometry will be discussed during this presentation. A classification of outcome measures will be given which would be informative for the selection of outcome measures in future clinical trials. Results of studies including technology as an assessment tool or as rehabilitation strategies will be presented.

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http://dx.doi.org/10.1016/j.rehab.2013.07.921

CO13-003-e

Balance disorders and falls in multiple sclerosis: An update

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Keywords: Mutliple sclerosis; Balance; Fall; Rehabilitation; Physiotherapy

Introduction.– For 6 years, studies have increased about the pathophysiological, clinical and therapeutic analysis of balance disorders and their predictors of falling.

Objective.– Updating knowledge on management of balance disorders and falls in multiple sclerosis.

Method.– Analysis of original works from 2006 to 2013 by MEDLINE search using the keywords: multiple sclerosis; balance; fall; rehabilitation; physiotherapy.

Results and discussion.– The balance disorders are multifaceted by achieving all centres to varying degrees: the lengthening of postural responses to sensory starting point as anticipatory adjustments, failure of sensory integration in brain stem present in 44% to 55% of cases, sensory deficit in 82% of cases. Some symptomatic disorders have clinical expression in increasing lateral oscillations. Fatigue plays a role in the expression of balance disorders, including the achievement of sensory integration centres in the brainstem, with a direct relationship to cognitive performance in dual task.

Falls are common: 58.2% drop in six months, and half of fall requires medical interventions. The causes are quite stereotyped neurological disease: deficiency of a lower limb, balance disorder, use of a cane and a high EDSS score.

Different approaches to the rehabilitation of balance disorders have the best low levels of evidence: specific rehabilitations sensory disorder equilibration resistance exercises. More playful edge as the Wii home exercises show some efficacy balance characteristics. The heterogeneity of the studies and the limited number included does not allow the setting effect clearer evidence.

http://dx.doi.org/10.1016/j.rehab.2013.07.922

CO13-004-e

Indications, interests and limits of quantified motion analysis in multiple sclerosis: Review of the literature

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Keywords: Gait; Gait disorders; Neurologic and multiple sclerosis

Introduction.– Multiple Sclerosis is a chronic disease of the central nervous system usually among young adults. Because of the importance of gait disorders among these patients, mobility is often used to classify the evolution of the disease. The classification, which is more often used, is Kurtzke "Expanded Disability Status Scale". Examination of these patients can be completed by the use of tools of assessment of gait.

Objective.– The objective of this review were to get an update of indications, interests and limits of Quantified motion analysis for Multiple Sclerosis and to suggest areas where these tools could be used.

Methodology.– PubMed was interrogated. Key words were "Gait", "Gait Disorders, Neurologic", "and Quantified motion analysis", "Multiple Sclerosis". Articles collected have been selected according to the abstract and have been classified among different areas of interest.

Results.– One hundred and thirty-six articles were identified by PubMed. After reading the abstracts, removal of papers published in a language other than French or English and of irrelevant articles, 33 articles were analysed for this review of the literature.

Discussion and conclusions.– In the absence of recommendations, a number of lessons can be drawn from this review: an analysis by GAITRite® walkway system can be suggested as a first step for these patients before/after care in rehabilitation or botulinum toxin. A Quantified motion analysis may be carried out in a second time to refine the diagnostic findings and/or assess the treatment. Several of the studies in this review of the literature demonstrate in fact the diagnostic value of these gait assessment tools: videos, kinematics, kinetics... They are also useful to assess the risk of a fall. However, there is currently no consensus on the use of these tools for this pathology. They are still little used and studies of validity on a large number of patients remain necessary.

http://dx.doi.org/10.1016/j.rehab.2013.07.923